Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV(New) • EXAMINATION – WINTER 2016

Subject Code:2140601 **Date:22/11/2016**

Subject Name:Advanced Surveying

Time:02:30 PM to 05:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q:1 Attempt following objective questions (14)

(1) An anallatic lens is provided to make the additive constant equal to
(a) 25 (b) 00 (c) 100 (d) 55

(2) The multiplying constant of the tacheometer is given by
(a) f / i (b) f - i (c) f + d (d) f + 2d

(3) In second order or secondary triangulation, length of sides is
(a) 16 to 150 km (b) 10 to 25 km (c) 2 to 10 km (d) None of above

(4) The optimal angle of a triangle for triangulation is
(a) 75^0 30’ 20” (b) 60^0 15’ 30” (c) 66^0 45’ 40” (d) 56^0 13’ 40”

(5) Errors arising from carelessness of the observer are known as
(a) Systematic errors (b) Compensating errors (c) mistakes (d) discrepancy

(6) The weight of an observation is
(a) Its probable value
(b) A number indicating the trustworthiness of measurements
(c) The average value from a number of observation
(d) The value indicating least error in the value

(7) One nautical mile is equal to
(a) 1 k.m (b) 1.5 k.m (c) 2 k.m (d) 1.853 k.m

(8) GST means
(a) Green Sidereal Time (b) Greenwich Sidereal Time
(c) Grey Side Time (d) None of above

(9) When opposite edges of photographs are not parallel to flight lines is known as
(a) Crab (b) Drift (c) Tilt (d) None of above

(10) The normal longitudinal overlap is generally kept
(a) 60 % (b) 15 % (c) 80% (d) 35%

(11) EDM means
(a) Electrical data management (b) Electronic data management
(c) Electronic distance meter (d) Electronic distance measurement

(12) Tellurometer was invented by
(a) Wild Heerbrugg (b) Dr. Eric Bergstrand (c) Dr.T L Wadley (d) None of above

(13) A global positioning system operated by US department of defense uses
(a) 6 satellites (b) 12 satellites (c) 18 satellites (d) 24 satellites

(14) GPS means
(a) Green Position System (b) Global position Satellites
(c) Geographical Public System (d) Global Positioning System

Q: 2 (a) Explain principle of tacheometry. (03)

(b) Enlist characteristics of tacehometer (04)

(c) A tacheometer was set up at a station C & the following readings were obtained on a staff vertically held. (07)

Inst. Station	Staff station	Vertical angle	Hair readings	Remark
C	B.M	-5^0 20’	1.150,1.80,2.450	R.L of B.M= 750.5 m
C	D	$+8^0$ 12’	0.75,1.5,2.25	

Calculate the horizontal distance CD & R.L of D when the constant of instrument are 100 & 0.15.

OR

(c) Describe the expression for horizontal and vertical distances by the fixed hair method when the staff is held vertically & the measured angle is that of elevation. (07)

Q: 3 (a) Define geodetic surveying, base line, well-conditioned triangles (03)

(b) Explain use of triangulation system. (04)

(c)What are the factors that affect the selection of site for base line? (07)

OR

Q: 3 (a) Define in-direct observation, weight of a quantity , accidental error (03)

(b) Explain any four laws of weight . (04)

(c) Determine the most probable value of the angles A, B & C of a triangle from the following observed angles & the respective probable errors of measurements. (07)

$<A = 64^0\ 12'40'' \pm 3''$ $<B = 55^0\ 14'\ 23'' \pm 2''$ $<C = 60^0\ 33'21'' \pm 4''$

Q: 4 (a) Define longitude, hour angle, nadir (03)

(b)Explain main purposes of field astronomy (04)

(c) Enlist the methods of determination of latitude & explain any one in detail. (07)

OR

Q: 4 (a) Define photogrammetry & explain uses of photogrammetry. (03)

(b) Define overlap & explain importance of overlaps. (04)

(c)The scale of an aerial photograph is 1 cm = 100 m. The photograph size is 23 cm x 23 cm. Determine the number of photographs required to cover an area of 100 sq.km if the longitudinal lap is 60 % & the side lap is 30 %. (07)

Q: 5 (a) Write short note on electromagnetic spectrum (03)

(b) What is total station? Explain the uses of Total station (04)

(c) Explain uses of GPS (07)

OR

Q: 5 (a) Define remote sensing. Enlist types of remote sensing (03)

(b) List applications of remote sensing (04)

(c) Write application of GIS in civil engineering (07)